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Amendments to the Claims

SEP 26/2007

1. (Currently amended) An apparatus for cleaning a surface within a vessel, the apparatus comprising:

an elongate combustion conduit extending from an upstream end to a downstream end associated with an aperture in a wall of the vessel and positioned to direct a shock wave toward said surface; and

means for movably supporting the combustion conduit at one or more locations along a length of the combustion conduit, the means comprising one or more hangers wherein:

the hangers engage first portions of the combustion conduit; and

a second portion of the combustion conduit downstream of the first is held relative to the vessel so as to vertically move with the vessel due to thermal expansion of the vessel, the hangers compliantly accommodating such vertical movement.

2. (Previously presented) The apparatus of claim 1 in combination with the vessel and wherein:

the vessel has a first external tube bundle and a second external tube bundle; and

the combustion conduit passes above the first external tube bundle and below the second external tube bundle.

3. (Original) The apparatus of claim 1 wherein:

the combustion conduit comprises at least one curved portion.

4. (Currently amended) The apparatus of claim 1 wherein:

the one or more hangers comprises one or more spring hangers.

5. (Canceled)

6. (Original) The apparatus of claim 4 wherein:

at least one of the spring hangers engages the conduit via one or more snubbers.

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7. (Original) The apparatus of claim 1 wherein:
a nozzle portion of the combustion conduit is parallel to but offset from a second portion of the combustion conduit.
8. (Original) The apparatus of claim 7 wherein:
said second portion forms a majority of a length of the combustion conduit.
9. (Original) The apparatus of claim 1 wherein:
the combustion conduit comprises a plurality of segments assembled end-to-end.
10. (Original) The apparatus of claim 9 further comprising:
external braces spanning a length of at least one of the segments.
11. (Original) The apparatus of claim 10 wherein:
there are at least first and second such external braces opposite each other and coupled to each other by at least one clamp grasping a body of an associated one of the segments.
12. (Original) The apparatus of claim 11 wherein:
there are third and fourth such braces respectively aligned end-to-end with the first and second external braces and secured thereto and extending relative thereto at a nonright and nonzero angle.
13. (Currently amended) The apparatus of claim 9 wherein:
there is a support structure integral with the wall; and
the means includes at least one said hanger supporting the combustion conduit from the support structure.
14. (Currently amended) An apparatus for cleaning a surface within a vessel, the apparatus comprising:

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an elongate combustion conduit extending from an upstream end to a downstream end associated with an aperture in a wall of the vessel and positioned to direct a shock wave toward said surface; and

one or more hangers supporting the combustion conduit at one or more locations along a length of the combustion conduit, wherein:

the hangers engage first portions of the combustion conduit; and
a second portion of the combustion conduit downstream of the first is held relative
to the vessel so as to vertically move with the vessel due to thermal expansion of the
vessel, the hangers compliantly accommodating such vertical movement.

15. (Original) The apparatus of claim 14 wherein:

the combustion conduit comprises at least one curved portion.

16. (Original) The apparatus of claim 14 wherein:

the hangers are constant load hangers.

17. (Canceled)

18. (Previously presented) The apparatus of claim 14 wherein:

the one or more hangers comprises a plurality of spring hangers.

19. (Canceled)

20. (Previously presented) The apparatus of claim 18 wherein:

at least one of the spring hangers engages the conduit via one or more snubbers.

21. (New) A combination of a vessel and an apparatus for cleaning a surface within the vessel, wherein:

the vessel has a first external tube bundle and a second external tube bundle; and
the apparatus comprises:

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an elongate combustion conduit extending from an upstream end to a downstream end associated with an aperture in a wall of the vessel and positioned to direct a shock wave toward said surface, the combustion conduit passing above the first external tube bundle and below the second external tube bundle; and

means for movably supporting the combustion conduit at one or more locations along a length of the combustion conduit:

22. (New) The apparatus of claim 21 in combination with the vessel and wherein:
the means comprises one or more hangers wherein:

the hangers engage first portions of the combustion conduit; and
a second portion of the combustion conduit downstream of the first is held relative to the vessel so as to vertically move with the vessel due to thermal expansion of the vessel, the hangers compliantly accommodating such vertical movement.